

## IP2083 VA ECMO for postcardiotomy cardiogenic shock in adults

Com . no.	Consultee name and organisation	Sec. no.	Comments	Response  Please respond to all comments
1.	Consultee 1 Company Medtronic	General	Medtronic thanks the National Institute for Health and Care Excellence (NICE) for the opportunity to respond to the draft recommendations on VA ECMO for Postcardiotomy Cardiogenic Shock in Adults [GID-IPG10432].	Thank you for your comment.
2.	Consultee 1 Company Medtronic	General	<p>Medtronic would like to express its support for the draft guidance stating that VA ECMO can be used in the NHS during the evidence generation period as an option to manage postcardiotomy cardiogenic shock (PCS) in adults.</p> <p>Unassisted postcardiotomy shock is almost uniformly fatal, and VA ECMO offers a potential rescue. Published evidence, while limited to observational studies, indicates that a meaningful proportion of patients can be salvaged by VA ECMO.</p> <p>A recent systematic review and meta-analysis found that 52.8% could be weaned from ECMO, and 31.1% of patients survived to hospital discharge.[1] Similarly, the large multicentre PELS-1 cohort (n=2,021 adults on VA ECMO after cardiac surgery) reported an overall in-hospital mortality of about 60% (implying ~40% survival).[2] These survival rates – in the range 30-40% - contrast</p>	<p>Thank you for your comment.</p> <p>Consultee supports the draft guidance.</p> <p>Kienlein (2025), Bunge (2024) are in table 5 of the overview.</p> <p>Mariani (2023) is in table 2 of the overview.</p> <p>Meani (2019) was identified in the NICE literature search but was not included in the overview. It is a literature review, which includes 15 studies published between 1994 and 2017, without any meta-</p>

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			<p>sharply with near-100% mortality without mechanical support, suggesting that ECMO can offer significant benefit in selected cases.</p> <p>Beyond initial survival, postcardiotomy ECMO survivors have excellent longer-term outcomes. The multicentre PELS-1 study reported that among patients who survived to hospital discharge, 1-year survival was 89.5%, 5-year survival was 76.4%, and 10-year survival 65.9%.[3] In other words, about two-thirds of discharged patients remain alive a decade later. Likewise, Meani et al. reported that, based on the limited information available, hospital survivors 'showed a favourable outcome, with improvement in overall clinical condition, quality of life and limited hospital readmission for cardiac-related events'.[4] In practice, these data mean that many patients weaned from VA ECMO not only survive to leave hospital but also recover neurologic and functional status, return to normal activities, and have low rates of heart-related rehospitalisation.</p> <p>Importantly, expert consensus also recognises the efficacy of VA ECMO as salvage therapy in this setting. International guidelines (EACTS/ELSO/STS/AATS 2021) emphasise that early initiation of ECMO in refractory postoperative shock improve perfusion and facilitate recovery.[5]</p>	<p>analysis. Because of the large evidence base, systematic reviews with meta-analyses were prioritised for inclusion in the overview.</p> <p>Lorusso (2021) was identified in the NICE literature review but was not prioritised for inclusion in the overview. It has been added to table 5.</p>

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			<p>In summary, the best available evidence shows that VA ECMO provides substantial survival and recovery benefits for adults with PCS. A significant proportion of patients supported on VA ECMO survive to discharge with full cardiac recovery, and those who survive hospitalisation enjoy durable long-term survival and good neurologic/functional outcomes.[3, 4] These positive outcomes underscore the value of VA ECMO as a rescue intervention.</p> <p>References</p> <ol style="list-style-type: none"> <li>1. Kienlein RM, Trauzeddel RF, Akbari N, Avalli L, Biancari F, Dini CS, Guenther S, Hagl C, Heringlake M, Kruppa J, Mäkikallio T. Outcome and complications in postcardiotomy cardiogenic shock treated with extracorporeal life support—a systematic review and meta-analysis. BMC anesthesiology. 2025 Jan 17;25(1):29.</li> <li>2. Bunge JJ, Mariani S, Meuwese C, Van Bussel BC, Di Mauro M, Wiedeman D, Saeed D, Pozzi M, Loforte A, Boeken U, Samalavicius R. Characteristics and outcomes of prolonged venoarterial extracorporeal membrane oxygenation after cardiac surgery: the post-cardiotomy extracorporeal life support (PELS-1) cohort study. Critical care medicine. 2024 Oct 1;52(10):e490-502.</li> </ol>	

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			<p>3. Mariani S, Heuts S, van Bussel BC, Di Mauro M, Wiedemann D, Saeed D, Pozzi M, Loforte A, Boeken U, Samalavicius R, Bounader K. Patient and management variables associated with survival after postcardiotomy extracorporeal membrane oxygenation in adults: the PELS-1 multicenter cohort study. Journal of the American Heart Association. 2023 Jul 18;12(14):e029609.</p> <p>4. Meani P, Matteucci M, Jiritano F, Fina D, Panzeri F, Raffa GM, Kowalewski M, Morici N, Viola G, Sacco A, Oliva F. Long-term survival and major outcomes in post-cardiotomy extracorporeal membrane oxygenation for adult patients in cardiogenic shock. Annals of cardiothoracic surgery. 2019 Jan;8(1):116.</p> <p>5. Lorusso R, Whitman G, Milojevic M, Raffa G, McMullan DM, Boeken U, Haft J, Bermudez CA, Shah AS, D'Alessandro DA. 2020 EACTS/ELSO/STS/AATS expert consensus on post-cardiotomy extracorporeal life support in adult patients. European Journal of Cardio-Thoracic Surgery. 2021 Jan;59(1):12-53.</p>	
3.	Consultee 2	General	VA ECMO should not be offered as a salvage for post-cardiotomy cardiogenic shock as the outcomes are very poor. in a planned elective procedure with a previous MDT discussion it can be considered.	<p>Thank you for your comment.</p> <p>The draft guidance states that patient selection should be done by</p>

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			Majority of patients in an emergency salvage situation have no bridge or access to temporary/mid-long term durable device and their recovery from salvage VAECMO is very negligible.	<p>a suitably constituted multidisciplinary team.</p> <p>Healthcare professionals do not have to offer this procedure and should discuss the available options with the person with PCS (and their family and carers as appropriate) before a joint decision is made, if possible.</p>

*"Comments received in the course of consultations carried out by NICE are published in the interests of openness and transparency, and to promote understanding of how recommendations are developed. The comments are published as a record of the submissions that NICE has received, and are not endorsed by NICE, its officers or advisory committees."*